EUROPEAN COMMISSION
Information Society and Media Directorate General

Lisbon Strategy and Policies for the Information Society
Lisbon Strategy and i2010

Use of Computers and the Internet in Schools in Europe 2006

Country Brief: Germany

6 / 2006

Key findings

(Almost) all German schools are equipped with computers and internet connection. 63% use the internet via a broadband connection. With this figure Germany ranks at number 21 of the 27 countries participating in the survey.

There is a large variation between school types: while only 54% of primary schools have a broadband internet connection, the penetration is highest among upper secondary schools, with 82%.

78% of German classroom teachers use computers in class, with little variation across school types and between urban and rural areas. Surprisingly little variation can be found in this respect according to the subjects of teaching.

A majority (56%) of these teachers using computers use them in less than 10% of all lessons. Only 6% state that they use computers in more than half of their lessons. Teachers in vocational schools use computers in class much more frequently than their colleagues in general education.

22% of teachers in Germany still do not use computers in class. 49% state a lack of computers in their schools as an important barrier, a very high 48% of teachers not using ICT are not convinced of any benefits of using computers in class and 46% express the opinion that teachers lack the necessary skills to utilize computers in their teaching.

Here we seem to have a problem in German schools since the figures on "lack of skills", "no or unclear benefits in using ICT" and "lack of interest" are two to three times higher than the European average. It appears that action is urgently required in the area of motivation towards, and teacher training in, ICT use in German schools.

The still sub-optimal quality of the internet connection in many schools and very importantly the lack of motivation of teachers not using computers for using ICT are the most critical issues for a wider uptake of computers and the internet in schools in Germany.

Despite these negative aspects but with 41% of German teachers disposing of sufficient access to the internet at school, the necessary competence in using ICT in class and the motivation to its use, Germany ranks at 7th on ICT readiness of teachers in Europe, placing the country just in the top quarter of European countries.

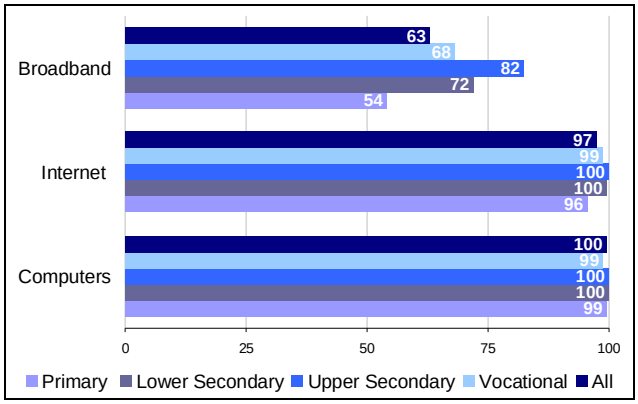
Most importantly action is urgently required to successfully counter the apparent and very significant lack of motivation of teachers not already using computers for using ICT in schools in Germany.

ICT Equipment and Internet in Schools

Almost all German schools now use computers for teaching and have internet access. 63% use the internet via a broadband connection. With this figure Germany ranks at number 21 of the 27 countries participating in the survey. There is a large variation between school types: while only 54% of primary schools have a broadband internet connection, the penetration is highest among upper secondary schools, with 82%. There is also some variation with regard to broadband access between urban and rural areas: 70% of schools in densely populated areas have broadband access compared to 56% of schools in thinly populated areas. Also, vocational schools in particular are under-proportionally equipped with broadband access. Here, Germany finds itself only at rank 23.

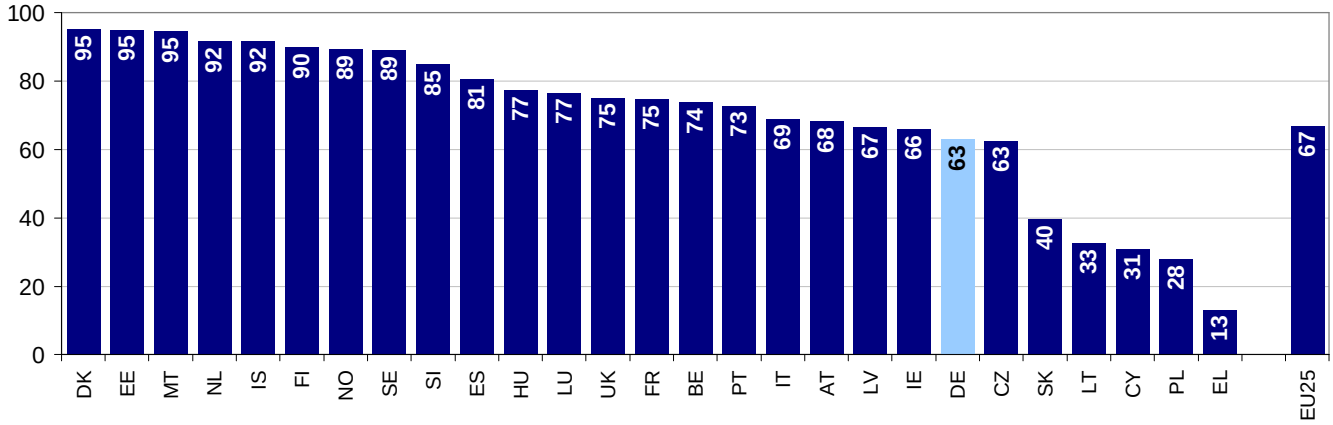
70% of schools have a website, 58% offer e-mail to teachers, and 20% do so to pupils. 66% of German schools using computers for teaching use them in classrooms, with the highest percentage being achieved in primary schools (80%). Computers in the school library are more or less restricted to upper secondary schools.

Percentage of Schools Using Computers, Internet Connection, and Broadband Internet Access According to School Type in Germany 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Computers: Q6; Internet, Broadband: Q9. See questionnaire for exact wording.*

Percentage of Schools with Broadband Internet Access in Europe 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Q9. See questionnaire for exact wording.*

ICT equipment in German schools 2006

			Educational Level (DE)				Type of locality (DE)			Internet Access (DE)	
	Total DE	Total EU25	Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computers per 100 pupils [a]	8.9	11.3	10.6	8.3	8.0	9.4	9.1	8.8	8.8	9.3	8.8
... of which internet connected	7.7	9.9	7.1	7.4	7.5	8.7	7.9	7.4	7.2	7.3	7.9
Percentage of schools having...											
Computers for teaching [b]	99.6	98.7	99.5	100.0	100.0	98.8	99.3	99.6	100.0	100.0	100.0
Internet access [c]	97.5	96.2	95.5	99.6	100.0	98.8	97.5	97.5	97.5	100.0	100.0
Broadband internet access [d]	62.9	66.9	54.1	72.0	82.5	68.1	69.8	59.0	56.0	0.0	100.0
A website [e]	70.2	63.0	53.5	81.8	93.9	82.8	77.6	70.1	55.1	63.0	77.0
An e-mail address for the majority of teachers [f]	57.6	65.2	62.2	56.8	53.0	58.8	52.5	59.4	64.6	59.5	58.8
An e-mail address for the majority of pupils [g]	19.7	23.5	16.9	21.9	21.5	25.1	19.2	19.4	21.3	15.9	22.6
A LAN [h]	66.0	55.2	58.1	77.0	83.7	68.7	69.8	63.6	62.8	53.1	75.8
An intranet [i]	41.2	40.8	28.6	49.8	60.5	54.6	50.5	39.0	25.8	34.3	46.6
An external support or maintenance contract [j]	33.7	47.1	33.8	33.5	34.4	44.8	37.4	31.9	29.4	35.3	34.2
Percentage of schools using computers for education in…											
Computer labs [k]	85.8	80.5	77.5	95.4	94.9	88.8	88.2	85.1	82.1	82.2	88.9
Classrooms [l]	66.1	61.4	80.1	61.2	55.2	56.5	72.3	65.2	55.1	69.8	63.8
School library [m]	23.0	33.4	10.6	28.5	52.7	32.5	28.1	20.2	17.6	15.8	27.7
Other locations accessible for pupils [n]	29.1	27.0	18.9	36.5	49.4	28.8	31.3	31.3	20.8	24.1	32.5

Source: *LearnInd HTS 2006;* ***Base:*** *a: all pupils; b-j: all schools, k-n: schools using computers for educational purposes for pupils (cf. index b);* ***Question:*** *a: Q4, Q6, Q7; b: Q6; c: Q9; d: Q9; e-j: Q12; k-n: Q8. See questionnaire for exact wording.*

Those schools with a broadband connection to the internet are much more likely to have a more sophisticated ICT infrastructure including a school website, the use of a LAN or the availability of an intranet.

The use of Computers and the Internet in Schools

Computers are used for various purposes and as part of teaching different subjects in schools but also and very widely as a separate subject.

Computer sciences are taught as a separate subject in almost 80% of both, lower and upper secondary schools and in almost 60% of vocational schools according to the statements made by German head teachers.

78% of German classroom teachers had used computers in class in the 12 months prior to the survey, with little variation across school types and between urban and rural areas. For most teachers, this includes not only using a computer for presentation purposes but also the use computers by pupils in class. Surprisingly little variation can be found in this respect according to the subjects of teaching[1].

A majority (56%) of these teachers using computers use them in less than 10% of all lessons. Only 6% state that they use computers in more than half of their lessons. Teachers in vocational schools use computers in class much more frequently than their colleagues in general education with almost 30% using computers in more than a quarter of their lessons.

German teachers using computers do not restrict themselves to a particular source of information but use a multitude of different material from a variety of sources for teaching purposes which in most categories is above the European average. They are also very active (88%) in searching for material themselves in the internet. This shows a very proactive behaviour.

Use of computers in class in Germany 2006

Assessments of the head teacher		Total DE	Total EU25	Educational Level (DE)				Type of locality (DE)			Internet Access (DE)	
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated	Narrow-band	Broadband
Computer sciences taught as separate subject	Agree	51.2	54.7	27.5	77.5	80.0	58.8	54.9	48.3	49.2	43.0	57.1
	Disagree	48.0	43.7	71.4	22.5	19.2	41.2	44.0	51.0	50.8	56.3	42.1
	Don't know	0.7	1.6	1.0	0.0	0.8	0.0	1.1	0.7	0.0	0.8	0.7
Computers and the internet are												
integrated into teaching of most subjects	Agree	69.2	75.3	70.3	69.4	79.3	69.8	69.8	67.4	71.2	66.1	71.1
	Disagree	30.5	24.1	29.1	30.6	20.7	30.2	29.5	32.6	28.8	33.9	28.4
	Don't know	0.3	0.6	0.5	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.4
used for teaching traditional subjects or basic skills	Agree	72.1	75.8	81.8	66.0	60.3	63.4	74.1	70.6	70.6	71.2	71.6
	Disagree	27.1	22.8	17.6	33.6	37.5	36.6	23.9	29.4	29.4	28.8	27.1
	Don't know	0.8	1.4	0.5	0.3	2.2	0.0	1.9	0.0	0.0	0.0	1.3
used for teaching foreign languages	Agree	53.9	56.6	46.5	57.4	67.3	48.2	56.5	55.4	45.8	46.5	58.9
	Disagree	45.0	40.1	52.4	42.3	31.1	50.4	40.8	44.6	54.2	52.9	40.1
	Don't know	1.1	3.3	1.1	0.3	1.5	1.4	2.7	0.0	0.0	0.6	1.0
used for teaching students with special needs/ handicaps	Agree	47.5	71.7	59.1	44.1	38.3	39.1	45.9	49.1	48.0	45.0	48.4
	Disagree	48.9	23.7	38.4	52.5	56.2	59.8	50.8	46.8	48.8	52.6	47.3
	Don't know	3.6	4.6	2.6	3.5	5.5	1.1	3.3	4.1	3.2	2.4	4.4

Source: *LearnInd HTS 2006;* ***Base:*** *All schools using computers for educational purposes for pupils;* ***Question:*** *Q13: "To what extent do you agree or disagree with the following statements regarding the educational use of computers and/or the internet in your school?"*

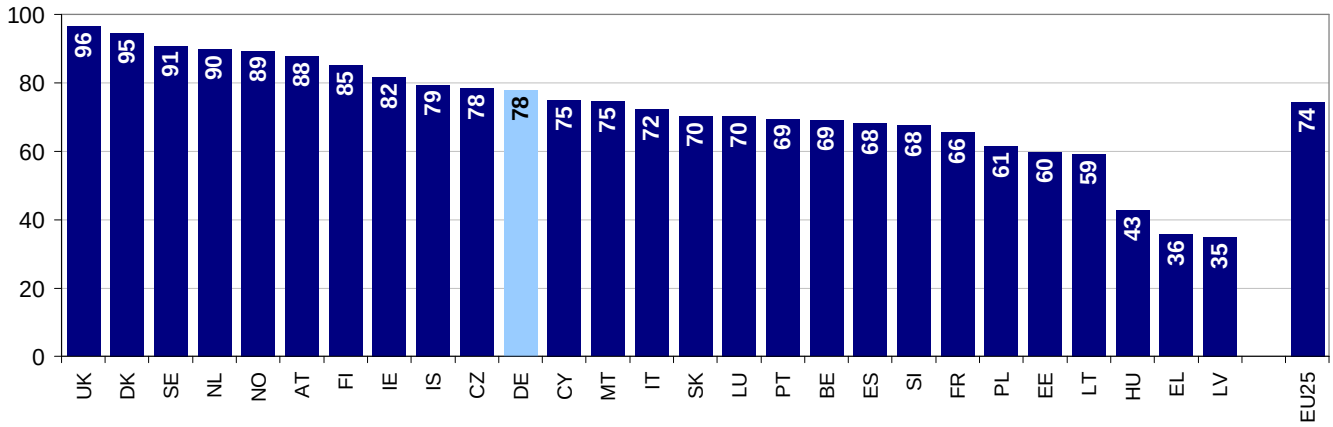
The learning material that is used most by German teachers includes offline learning materials such as CD-ROMs and material that has been collected by the teacher on the internet. This applies to almost 90% of teachers for both types of material used. About 70% of teachers use prefabricated pedagogical material from existing online sources and material that is made available on the schools' network and databases.

Not surprisingly, the older the teachers (indicator used here: years of teaching experience), the less use they make of computers and the internet in schools.

Also, the higher the school level, the more use of computers – especially in terms of frequency and intensity – is made by teachers and pupils. Around a quarter of the teachers using computers in class in upper secondary and vocational schools use these in more than 25% of their lessons, whereas the figure only reaches 16% in primary schools. There are hardly any differences according to age of the teachers. The overall pattern is rather similar across all groups.

22% of teachers in Germany still do not use computers in class. When asked for the most important barrier, three issues gain the highest ratings among this group of teachers: 49% state a lack of computers in their schools as an important barrier, 48% are not convinced of any benefits of using computers in class and 46% express the opinion that teachers lack the necessary skills to utilize computers in their teaching. This results in a situation where the statement "lack of equipment in school" is expressed by a substantial 11% of all German teachers (22% non-users multiplied with 49% of teachers agreeing to this item).

Percentage of teachers who have used computers in class in the last 12 months (2006)



Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7. See questionnaire for exact wording*

The differences compared to the European average are striking. German teachers not using computers in class show figures on "lack of skills", "no or unclear benefits in using ICT" and "lack of interest" which are two to three times higher compared to the European average. It appears that action is urgently required in the area of motiva-

tion for, and teacher training in, ICT use in German schools.

At the same time virtually all schools are at least equipped with some computers in Germany, so that the above statement suggests that there seems some scope for further ICT-infrastructure improvements in German schools such as an increase of the number of computers in total and per pupil where Germany ranks below the European average.

Teachers' use of computers in class in Germany 2006

Percentage of teachers who …	Total DE	Total EU25	Educational Level (DE)				Type of locality (DE)			Years of teaching experience (DE)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
...have used computers in class[2]	78.0	74.3	78.0	77.2	80.4	78.6	77.9	77.5	79.1	82.0	81.5	80.9	76.3
…use a computer in class to present or demonstrate	69.7	63.4	69.3	70.1	74.2	72.1	70.2	69.5	69.1	73.3	78.9	72.5	67.2
…have pupils use a computer in class	74.7	66.3	76.0	73.6	75.8	73.6	74.7	73.4	77.1	79.8	74.2	78.5	73.1

Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7 "How have you used computers and/or the internet for work in the last 12 months?"*

Frequency of computers use in class Germany 2006

Percentage of all teachers *using computers in class* who …	Total DE	Total EU25	Educational Level (DE)				Type of locality (DE)			Years of teaching experience (DE)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
…use computers in 5% and less of all lessons	23.2	18.5	23.8	23.9	21.6	16.1	23.2	21.6	26.1	27.9	28.7	21.2	22.3
in 6 to 10% of lessons	32.6	22.5	35.5	31.5	27.8	26.8	33.1	33.2	30.4	28.4	27.5	33.4	33.7
in 11 to 24% of lessons	25.6	22.2	24.8	24.6	26.9	28.5	26.8	25.1	23.9	26.5	25.7	27.2	24.9
in 25 to 50% of lessons	12.8	20.2	11.9	13.8	14.7	17.4	11.5	13.1	14.7	11.6	8.7	12.0	13.8
more than 50% of lessons	5.9	16.5	4.0	6.2	9.0	11.2	5.4	6.9	4.8	5.6	9.5	6.3	5.3

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class, "don't know" answers excluded;* ***Question:*** *Q9 "For what percentage of time have you used computers and/or the internet in class when teaching your main subject(s) in the past 12 months?"*

Source of educational material used in class in Germany 2006

Percentage of all teachers *using computers in class*[3] who …	**Total DE**	**Total EU25**	**Educational Level**				**Type of locality**		
			Primary	**Lower secondary**	**Upper secondary**	**Vocational**	**Densely populated**	**Inter-mediate**	**Thinly populated**
…use material they have searched the internet for	88.2	82.7	85.7	90.0	90.6	90.0	85.8	90.7	88.6
…use existing online material from established educational sources	69.4	74.2	68.4	70.6	68.1	71.8	67.5	72.6	67.4
…use material that is available on the school's computer network or database	71.4	63.1	71.1	74.1	70.9	73.4	71.1	72.1	70.7
…use electronic offline material (such as CD ROMS)	88.3	83.0	92.4	84.4	88.8	88.8	87.2	87.0	93.1
…use other learning material when using computers in class	26.8	8.8	26.7	28.2	32.3	28.8	30.0	26.0	21.7

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class;* ***Question:*** *Q10 "Which of the following types of materials have you used when teaching your main subject(s) with the aid of a computer and/or the internet?"*

Barriers to computer use in class in Germany 2006

Percentage of all teachers ***not*** *using computers in class*	Total DE	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Lack of computers	49.5	48.8	50.1	47.8	44.4	*53.0**	54.7	41.8	*53.3**
Lack of adequate content/material	21.5	20.3	19.1	25.2	19.7	*18.9**	21.7	22.9	*17.9**
Lack of content in national language	13.9	8.6	12.6	14.0	12.5	*15.4**	12.3	17.3	*10.7**
Lack of adequate skills of teachers	46.2	22.5	52.8	45.6	39.2	*39.3**	40.0	52.0	*48.4**
No or unclear benefits	47.5	16.2	46.2	46.6	46.6	*47.3**	43.4	52.1	*47.6**
Lack of interest of teachers	21.5	8.9	23.1	22.7	22.5	*19.6**	17.1	25.3	*24.0**
Subject does not lend itself to being taught via computers	25.4	24.4	26.9	24.1	26.5	*20.8**	20.7	27.9	*31.0**
Other	31.1	21.3	30.7	32.2	36.7	*30.0**	28.9	31.6	*35.3**

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers not using computers in class;* ***Question:*** *Q12: "Why do you not use computers and/or the internet when teaching in class?"*

Comparison of the situation in 2001 and 2006[4]

In Germany the percentage of schools using computers for educational purposes has risen over the past 5 years from an already high 94% in 2001 to 100% in 2006.

While in 2001 one hundred pupils had to share 5 computers the figure had risen to 9 by 2006, an improvement of almost 50% but still at a level below the European average of 12.

Schools have moved over to broadband. 59% (EU25: 45%) of the schools in Germany are connected to the internet via a DSL connection in 2006. The figure for 2001 was just 1% (EU15: 5%). The figures have increased strongly over the past 5 years.

Schools have also strongly increased the quality of ICT use: while in 2001 48% (EU15: 44%) of the schools in Germany had their own website, it is now 70% (EU25: 62%). Also the use of a LAN – which was used by 40% (EU15: 47%) of the German schools – is now up to 66% (EU25: 54%).

Attitudes on the Usefulness of ICT use in Teaching

Computers and the internet have arrived in German schools and their use is steadily improving. The share of teachers in Germany – but also in the European Union in general – who believe that computers and the internet should not at all be used in schools, is very low and below 1%. German teachers have positive attitudes about the different applications of ICT in teaching and achieve high figures (above the European average) on attitudes that ICT should be used for letting pupils do exercises and practise (87%), letting pupils retrieve information in a self directed manner (97%) and for collaborative and productive work by pupils (80%). There are only small differences across school types. The majority of German teachers (64%) still believe that teaching about office tools should be an integral part of the teaching process. With this figure, the country ranks around the EU25 average figure. This attitude is most prominent among teachers in vocational schools (72%) and least prominent in primary schools (55%). It is interesting that there is no common pattern across the European countries. In some countries (e.g. the UK, Norway, Iceland, Cyprus but also Spain) teachers in primary schools express this opinion much more strongly and to a larger extent compared to those at higher-level schools.

Attitudes on the Usefulness of ICT use in Teaching in Germany 2006

Percentage of teachers saying computers/internet should be used for …	Total DE	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Letting pupils do exercises and practise	87.0	79.9	88.9	85.7	80.0	80.0	85.2	88.3	88.3
Letting pupils retrieve information in a self directed manner	96.6	85.0	95.8	95.8	96.6	96.3	97.0	95.9	97.2
Teaching about office tools	63.5	61.3	55.3	69.9	68.7	72.6	64.6	63.4	61.4
Collaborative and productive work by pupils	80.0	80.5	81.5	77.3	79.5	76.3	80.1	82.1	75.8
Computer/internet should not be used for any of these in teaching	0.5	0.6	0.6	0.8	0.8	0.5	0.3	0.9	0.0

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers;* ***Question:*** *Q13: "What do you think for what computers and the internet should be used for in teaching?"*

Access, Competence and Motivation for Using ICT and the Internet in Schools

Access

The majority of German teachers are more or less satisfied with the technical access means at their schools: 81% state that their school is well equipped with computers and 79% express the opinion that their internet connection is fast enough. However, 56% wish there were better support and maintenance actions taken. In terms of content 38% state problems with respect to finding adequate learning materials 29% and argue that existing material are of poor quality.

Competence in using ICT

German teachers feel most competent in using e-mail and using a text processor programme but are less confident with downloading and installing software and with using presentation software packages.

Primary school teachers (37%) seem to be less ICT competent than those in upper secondary (29%) and vocational schools (28%).

Motivation for ICT use in Schools

Over 80% of German teachers see significant learning benefits for pupils using computers in class and as many say that pupils are more motivated and attentive when computers and the internet are used in class.

Teachers' access, competence and motivation for using ICT in class 2006

Percentage of teachers agreeing or strongly agreeing:	Total DE	Total EU25	Educational Level				Subject of teaching					
			Primary	Lower secondary	Upper secondary	Vocational	General primary	Literature and languages	Humanities and social sciences	Science, maths, computer sciences	Physical, artistical, crafts education	Vocational education
Access												
Our school is well equipped with computers [a]	81.4	74.2	79.3	83.6	84.4	86.9	71.6	80.4	84.9	82.4	80.7	75.2
The internet connection we have is sufficiently fast [b]	79.4	77.2	75.2	83.9	81.5	84.3	78.9	78.0	81.1	79.6	75.8	85.1
Better technical maintenance and support is required in our school [c]	56.4	64.8	60.4	53.3	55.3	50.4	60.7	53.7	52.0	60.0	56.3	48.9
Existing teaching materials on the Internet are of poor quality [d]	28.7	29.9	26.5	33.2	34.2	32.7	*22.8**	26.5	29.9	29.0	28.8	40.7
It is hard to find adequate learning materials for teaching [e]	38.5	38.7	34.6	41.0	43.5	39.0	35.1	35.1	44.8	36.9	39.8	54.9
Motivation												
Pupils are more motivated and attentive when computers and the internet are used in class [f]	81.0	86.3	81.8	80.2	76.6	81.7	79.9	80.4	81.4	81.4	81.3	82.8
Using computers in class does not have significant learning benefits for pupils [g]	18.8	20.7	16.9	19.7	21.7	20.9	14.1	20.7	26.4	16.2	17.1	21.5
Competence												
Teachers in our school do not have sufficient computer skills [h]	35.1	42.0	37.3	34.8	28.8	28.4	42.9	34.9	34.2	34.7	38.8	33.5
Competence / computer skills (Percentage of teachers who feel very confident at…)												
Using text processors [i]	59.2	65.0	54.9	64.8	67.5	64.7	*50.1**	50.6	59.3	62.7	51.8	70.8
Creating electronic presentations [j]	26.2	34.0	19.9	32.9	34.8	39.0	*19.9**	15.3	24.0	31.8	14.9	37.7
Using e-mail [k]	71.4	65.9	68.6	73.0	77.0	75.6	*67.9**	67.4	69.4	72.0	71.1	80.5
Downloading and installing software [l]	42.1	35.8	37.5	46.8	48.6	48.4	*37.9**	34.1	38.9	47.3	33.0	50.5

Source: *LearnInd CTS 2006;* ***Base:*** *a-h All teachers; i -l Teachers using computers in class* ***Question:*** *a-h Q14, i-l Q11*

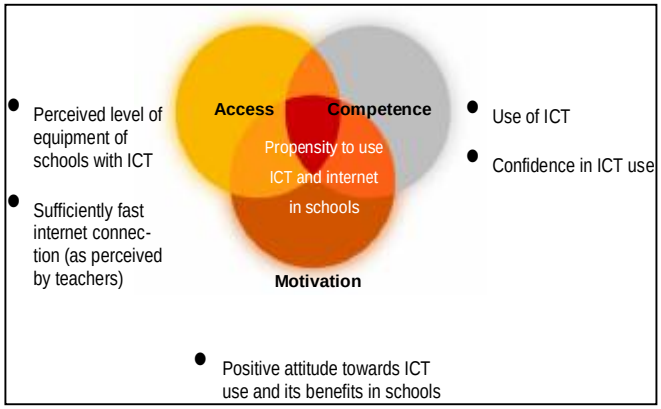
ICT Readiness of Teachers – the ACM Model

The ACM model as developed by Viherä and Nurmela (2001)[5] was applied in LearnInd to generate a typology according to the "propensity to the use of computers and internet by teachers in classroom situations at schools".

The typology in the figure below takes account of the three main categories of preconditions which need to be given for a school to make use of computers and the internet in the teaching process in classrooms, computer labs etc.

These are: access (to computers and the internet at school), competence (in using the computer software and the internet, and applying it for teaching purposes), and motivation (gauged through the attitude that using computers in classrooms results in significant learning benefits).

The Access-Competence-Motivation Model



Any attempt to group the classroom teachers according to their propensity to becoming users of computers and the internet in their teaching processes needs to take account of these three dimensions. In the present application of the ACM model data from the Classroom Teacher Survey (CTS) was used. Therefore "access" for instance is to be understood as a perceived level of computer equipment at schools and teachers' satisfaction therewith rather than an objective measure of equipment status.

38% of European teachers dispose of sufficient access to the internet at school, the necessary competence in using ICT in class and are motivated to its use. With 41% of the teachers belonging to this group, Germany ranks at 7th, placing it just in the top quarter of European countries. Overall the UK with 60% ranks top and Latvia with 15% finds itself at the very end.

The as yet insufficient internet connection in many schools and a lack of motivation of teachers for using ICT are the most critical issues for a wider uptake of computers and the internet in schools in Europe. 20% of European teachers indicate insufficient computer equipment and the low speed of internet connection at their school as key barriers. 14% show a lack of motivation, i.e., they are of the opinion that using computers in class does not result in significant learning benefits.

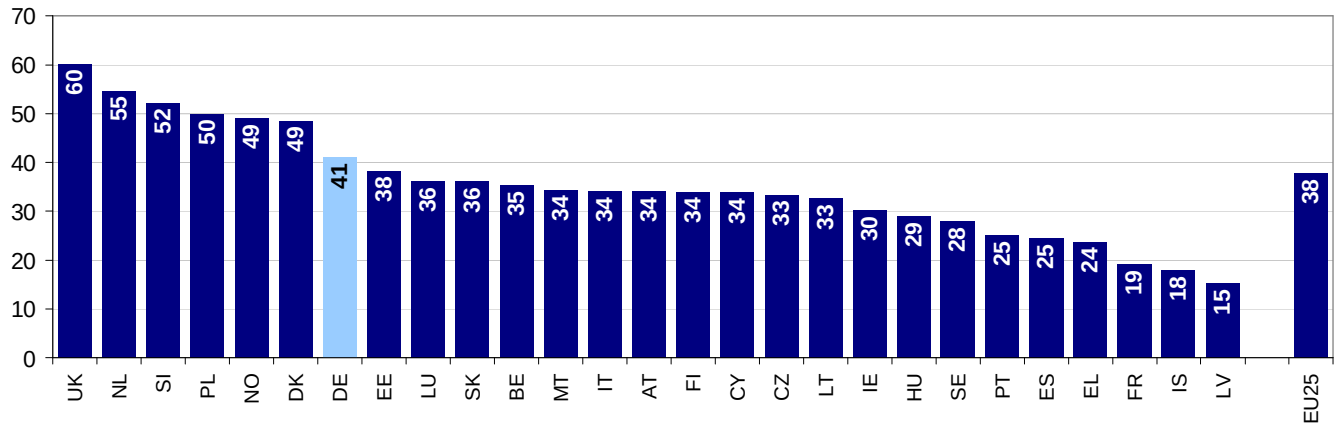
The situation in Germany is very similar to the overall situation in the EU25 with figures very close to the European ones. Most importantly action is urgently required to successfully counter the apparent and very significant lack of motivation of teachers not using computers for using ICT in schools in Germany.

Access, Motivation and Competence of Teachers for Using ICT in Schools in Germany 2006

DE	EU25	Access	Competence	Motivation
4.8	4.3	~~Access~~	~~Competence~~	~~Motivation~~
5.5	3.9	**Access**	~~Competence~~	~~Motivation~~
8.4	9.7	~~Access~~	**Competence**	~~Motivation~~
3.5	5.0	~~Access~~	~~Competence~~	**Motivation**
14.1	13.7	**Access**	**Competence**	~~Motivation~~
4.6	4.8	**Access**	~~Competence~~	**Motivation**
18.1	20.7	~~Access~~	**Competence**	**Motivation**
41.0	37.9	**Access**	**Competence**	**Motivation**
100	100			

Percentage of teachers. ***Source:*** *LeanInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *See endnote* [6]

ICT Readiness of Teachers in Germany: Percentage of Teachers Fully Ready to use Computers in Class (ACM Indicator) 2006



Source: *LeanInd CTS 2006;* ***Base:*** *All teachers.* ***Question:*** *See endnote 5*

ANNEXES

Methodology Report

Universe / Sample population

In order to assure the comparability of school levels in all countries UIS-OECD-EUROSTAT "Mapping of national education programmes to ISCED 97 for school academic/year 2002/2003" [7] was used for composing the sample frame. Based on this, each country divided its school system into ICSED codes and made different combinations that existed in its country.

Sampling frame and method

The sample was composed using official databases, which contained contact data of schools. In the majority of countries the sample was drawn from a database received from the Ministry of Education.

For each country a separate template of sample frames was composed by TNS Emor. These templates contained data about school types across regions as well as location type. School types were defined based on the ISCED codes provided in UIS-OECD-EUROSTAT. Location type distribution was made according to the Eurostat type of locality classification which differentiates densely populated, intermediate and thinly populated municipalities[8]. Apart from that, each country was divided into 3-7 regions depending on the size of a country.

Based on the data provided by countries, TNS Emor composed quotas for each country. Two level stratification was used – quotas for first stage, random sample for second. The quotation for region by school type and location type were endorsed. Simple random selection was conducted by the local agency or the local source of the contact base. Both private and public schools were included in the sample. It was also obligatory to include schools of other teaching languages than the official language of a country in the sample.

Simple random sampling was used inside a quota cell. This means that if the quota for primary schools in region1 was 100 and the total number of primary school in this region was 800, then a random sample selection was be made among those 800 schools. This covered also both private and public schools and schools of other teaching languages than the official language of a country.

No more than 50% of interviews could be made in one school level. At least 10% of respondents had to be from schools, which provided professional/vocational or combined programme of vocational and upper secondary level education (in case a country did not have special quota for those schools). It did not matter whether vocational education level was coded as ISCED 3 or ISCED 4.

There were no duplications in samples of head teacher and classroom teacher surveys. This was only allowed in countries with small universe sizes (e.g. Malta, Cyprus, Iceland, Estonia, Latvia etc) and in cases where the last quota cells were very difficult to achieve or there were not enough schools of a certain type. The priority was to include as many different schools as possible. In both surveys, 5 attempts were made before giving up and only if the respondent refused was this person not contacted again.

The CATI programme generated a randomly chosen letter. The interviewer asked for the person with a surname that started on the generated letter. If there was more than one teacher whose surname started with the selected letter, the person who was first alphabetically was chosen. If the correct person was not available, an appointment was made. At least 5 attempts were made, before taking another teacher.

Only in Malta, due to instructions dictated by the Education Department, would the Head Teacher randomly select a teacher who would be available for an appointment during which they would be interviewed.

Number of interviews conducted (HTS / CTS)

Country		Head Teachers	Classroom teachers
BE	Belgium	450	807
CZ	Czech Republic	500	1000
DK	Denmark	315	848
DE	Germany	450	901
EE	Estonia	400	851
EL	Greece	500	1000
ES	Spain	518	1022
FR	France	501	869
IE	Ireland	403	626
IT	Italy	500	900
CY	Cyprus	150	600
LV	Latvia	451	902
LT	Lithuania	457	908
LU	Luxemburg	82	277
HU	Hungary	500	1000
MT	Malta	100	200
NL	Netherlands	515	890
AT	Austria	320	450
PL	Poland	500	1000
PT	Portugal	450	900
SI	Slovenia	253	460
SK	Slovakia	502	1000
FI	Finland	318	601
SE	Sweden	200	450
UK	United Kingdom	450	905
IS	Iceland	177	424
NO	Norway	494	708
TOTAL		**10456**	**20499**

Fieldwork

Fieldwork was coordinated by the TNS Emor and conducted in cooperation with its local TNS offices excluding Iceland, Cyprus, Austria, Slovenia and Malta where TNS does not have offices. In these countries partners with whom TNS had previous experience were used.

Pilot interviews prior to the regular fieldwork were conducted with 20 schools in both target groups in Estonia and Greece in February 2006, in order to test the questionnaire (structure, comprehensibility of questions).

Between March and April 2006, surveys among head teachers (head teacher survey - HTS) and classroom teachers (CTS) were carried out in 27 European countries of Europe. TNS Emor was responsible for the fieldwork.

Weighting schemes

After the fieldwork, weighting coefficients were computed using region, location type and school type.

Statistical accuracy of the survey: confidence intervals

Statistics vary in their accuracy, depending on the kind of data and sources. A "confidence interval" is a measure that helps to assess the accuracy that can be expected from data. The confidence interval is the estimated range of values on a certain level of probability of error. Confidence intervals for estimates of a population fraction (percentages) depend on the sample size, the probability of error, and the survey result (value of the percentage) itself. Further to this, variance of the weighting factors has negative effects on confidence intervals.

The calculation of confidence intervals is based on the assumption of (quasi-) infinite population universes. In practice, however, in some countries and for some school levels the complete population of schools consists of only several hundred or even a few dozen of schools. In some cases, literally each and every school within a country-school type cell was contacted and asked to participate in the survey. This means that it is practically impossible to achieve a higher confidence interval through representative school surveys in which participation is not obligatory.

Country Background Data

Germany is the by far largest Member State with an above average GDP, a very low fertility rate and a medium pupil teacher ratio. 9.5% of government spending goes to education in Germany, which is at a low level compared to other European countries.

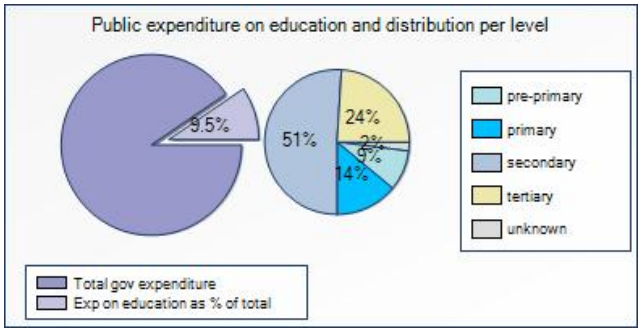
General Population Data for Germany 2002/03[9]

Total population (000)	82,414
Annual population growth rate (%)*	0.2
Population 0-14 years (%)	15
Rural population (%)*	12
Total fertility rate (births per woman) *	1.3
Infant mortality rate (0/00) *	4
Life expectancy at birth (years) *	78
GDP per capita (PPP) US$ *	27,175
GDP growth rate (%)*	0.2
* World Bank World Development Indicators	

Resources for Education in Germany 2002/03

Pupil / teacher ratio (primary)	14
Public expenditure on education :	
as % of GDP	4.8
as % of total government expenditure	9.5
Distribution of public expenditure per level (%):	
pre-primary	9
primary	14
secondary	51
tertiary	24
unknown	2

Resources for Education in Germany 2002/03



The use of ICT in Education[10] - recent developments

According to the 2000 information society index on national, local and regional information society initiatives, Germany ranks sixth in the EU.

The “Forum Info 2000” initiative was Germany’s first national activity paving the way towards the Information Society, and was started by the Federal Government in 1996.

November 1999 saw the launch of a new action programme of the Federal Government entitled “Innovation and Jobs in the Information Society of the 21st Century”. As part of this programme, four strategic fields of action were outlined: ensuring broad access to the new media and providing media competence; increasing the confidence of suppliers and users with security legislation; promoting state modernisation; shaping change together. Coinciding with these was the modernisation of school and vocational training systems, one of the general aims to be accomplished by 2005.

The industrial sector supported the provision of 20,000 schools with ICT facilities through the federal initiative “Schulen ans Netz” (Schools On Line) (developed together with Deutsche Telekom) which equipped and connected more than 8,000 schools with 5,000 more to come subject to the provision of complementary local and regional funding. Overall, Deutsche Telekom has provided both free Internet access and 20,000 computers.

As part of this initiative, an association, comprising 120 firms, is assisting in the provision of computer-related infrastructure at preferential rates. The qualified staff members from these firms are also acting as free consultants to the schools. The “Schools Online” initiative was launched in 1996.

The programme to modernise *vocational* educational institutions is centred on the provision of ICT facilities and is implemented by the Ministry for Education and Research. In 2000 the federal government allocated €83.34 million to provide computer facilities, the establishment of communication networks in higher education institutions and the extension of opportunities in training in computer science.

The Study

There is a lack of information on the actual use of ICT for learning in schools and for supporting political action in potential future programmes. It is necessary to clarify matters such as the educational vision of heads of schools, the current impact of ICTs on teachers' practice, support and training and on other factors for success in e-learning.

The objective of the study is to obtain estimates for the eEurope 2005 indicator on e-learning "number of pupils per computer with Internet connection (broadband/non-broadband)" and relate it to other possible indicators of educational use of ICT in compulsory education (e-learning in schools). The study looks at how Information and Communication Technologies (ICT) are used in schools.

The study is a continuation of the earlier benchmarking exercise for eEurope 2002.

It involved two surveys. Firstly of head teachers to obtain information on the schools and then of teachers to focus on their use of ICTs in the teaching process

This exercise is part of the Information Society monitoring and benchmarking process for which the Commission in cooperation with the Council defined benchmarking indicators.

Country Briefs

This document has been prepared by **empirica** based on own desk research and the above mentioned primary data sources: Head Teacher Survey (HTS) 2006 and Classroom Teacher Survey (CTS) 2006 in the EU25 member states, Iceland and Norway.

Altogether 27 LearnInd Country Briefs are available in a common format, one for each member of the enlarged European Union, Norway and Iceland.

Also a final report has been developed. It includes approximately 100 exhibits, more than 250 data tables and a report about the key results.

You can access and download these documents in PDF format (for free) from http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm.

More information

Check our results and achievements on: http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm. If you wish to be provided with more details, or to receive news and updates, please contact us at: **learnind@empirica.com** or get in touch with us.

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1 It has to be noted that teachers however in most cases have more than one subject and may use computers only in one subject. This has not been surveyed

2 Note that "in class" means during lessons while teaching and does not denote a particular location such as a classroom.

3 Base (100%) = all teachers who have used a computer in class in the last 12 months.

4 This section includes some comparisons of the Eurobarometer Flash 94/1001 and 95/102 results from 2001 with those from the LearnInd surveys from 2006. Please bear in mind that the figures are not directly comparable due to the use of slightly different approaches and methodologies.

5 Viherä, M-L, Nurmela, J (2001) "Communication Capability Is an Intrinsic Determinant for Information Age", in Futures, Volume 33, Issue 3-4:245-265.

6 Synthetic indicators: Access: Q14 (2) "Our school is well equipped with computers" and Q14 (3) "The internet connection we have is sufficiently fast ".

Competence: Q11 How confident do you feel... a) using a text processor, b) creating a presentation c) using e-mail, d) downloading and installing software. Threshold: Average of 2.5 or more on a 1-4 confidence scale

Motivation: Q14 (8); disagree to "Using computers in class does not result in significant learning benefits".

For full question wordings refer to questionnaire.

7 http://forum.europa.eu.int/Public/irc/dsis/edtcs/library?l=/public/unesco_collection/programmes_isced97&vm=detailed&sb=Title

8 Densely populated area refers to a set of closely related local units, each one of which having a density greater than 500 inhabitants per km2, and the total population of which being of at least 50 000 inhabitants; Intermediate area refers to a set of closely related local units that do not pertain to a densely populated area, each one of which having density greater than 100 inhabitants per km2, and where the total population is at least of 50 000 inhabitants or it refers to a set that is adjacent to a highly populated area. Thinly populated area (rural): refers to a set of closely related local units that are not part of a densely populated area, or of an intermediate area. (A set of local areas totalling less than 100 km², not reaching the required density, but entirely enclosed within a densely-populated or intermediate area, is to be considered to form part of that area. If it is enclosed within a densely-populated area and an intermediate area it is considered to form part of the intermediate area).

9 Source: http://www.uis.unesco.org/profiles/selectCountry_en.aspx (visited 28 March 2006)

10 Source: Conor McCaffery: The Digital Divide in the EU: National Policies and Access to ICTs in the Member States. Oscail – National Distance Education Centre Dublin City University, Dublin 9, Ireland.